2013 UDOT RESEARCH PROBLEM STATEMENT

****** Problem statement deadline is March 25, 2013. Submit statements to Steve Bagley at sbagley@utah.gov ******

Problem Title: Innovative Intersection Safety Analysis - An Evaluation of Methodologies **No. UT-13.03.15**

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Select a Subject Area

- ☐ Materials/Pavements
- ☐ Maintenance
- ☒ Traffic Mgmt/Safety
- ☐ Geotechnical
- ☐ Preconstruction
- ☐ Planning/Asset Mgmt
- ☐ Transportation Innovation

1. Describe the problem to be addressed.

Utah is home to a large number of innovative intersections and interchanges. These include the continuous-flow intersection (CFI), the single-point urban interchange (SPUI), the diverging diamond interchange (DDI), the thru-turn, and others. The Utah Department of Transportation (UDOT) is in an interesting position to be able to be a leader in identifying both safety and operational impacts of these innovative intersections and interchanges. The majority of these intersections and interchanges have been installed within the past 2-3 years, which means that there is not currently sufficient safety 'after' data to perform an effective analysis of their benefits. To be ready to perform this analysis, however, it is important to ensure a consistent methodology for evaluation and that the right data are available when the safety data have been collected and summarized. The purpose of this research project is to develop a methodology for evaluating the safety benefits of innovative intersections and interchanges, including identifying the data that should be collected at these locations to ensure that an effective analysis can be performed.

2. Describe why this research is important and how it is unique.

This research is important in planning ahead for a safety evaluation of innovative intersections and interchanges. This project will allow provide a synthesis of best practices and the legwork to be done such that once the crash data are available for the full analysis, the remaining data collection will have already been completed.

3. List the research objective(s) to be accomplished:

1. Perform a synthesis of best practices for the evaluation of safety benefits of innovative intersections and interchanges.
2. Utilize the UDOT crash database to ensure that the necessary data have been (will be) collected to evaluate the safety benefits of innovative intersections and interchanges.
3. Develop a consistent methodology for the analysis of safety benefits of innovative intersections and interchanges in Utah.

4. List the major tasks to accomplish the research objective(s):

1. Develop a project scope of work and detailed estimate.
2. Perform literature review and synthesis of best practices and analysis techniques for intersection and interchange design.
3. Evaluate current crash database to compare collected data to data needs determined through the synthesis of best practices.
4. Develop a consistent methodology for the analysis of safety benefits of innovative intersections and interchanges in Utah.
5. Report results to UDOT in the form of a written report

5. List the deliverable(s) to come to UDOT from this research study:

1. Engineering report documenting the literature review and research results.
2. Methodology for the evaluation of safety benefits of innovative intersections and interchanges.

6. Describe how the results of this study will be implemented at UDOT.

This research would be implemented by the UDOT Traffic & Safety Division to ensure that the necessary data are available to evaluate the safety benefits of innovative intersections and interchanges. These results would then be used in a future study to perform the analysis (once sufficient 'after' data are available).

7. Estimated cost - Total: $40,000 **UDOT Share:** $40,000 **Other/Matching Funds:** $

8. Outline the proposed schedule for this study, including estimated start date, duration, and major event dates.

It is recommended that this project begin late summer/early Fall 2013 with the project scope of work and detailed estimate, followed with the literature review/synthesis of best practices. The work will continue as outlined. It is anticipated to take 12-16 months.